

What is claimed is:

1. A method for affecting thermoacoustic oscillations in a combustion system (5) comprising at least one burner (6) and at least one combustor (7), in which a gas flow forming in the region of the burner (6) is excited acoustically and/or in which modulated injection of fuel is carried out, characterized in that the acoustic excitations of the gas flow and/or the modulated injections of the fuel are coordinated in order to affect at least two different interference frequencies of the thermoacoustic oscillations.
2. The method as claimed in claim 1, characterized in that two interference frequencies are affected exclusively by means of acoustic excitation of the gas flow with different phases and/or amplitudes.
3. The method as claimed in claim 2, characterized in that the acoustic excitation of the gas flow is produced with at least one acoustic source (3), the production of acoustic excitations of different phases and/or amplitudes being carried out either via a common acoustic source or via at least two separate acoustic sources (3, 3').
4. The method as claimed in claim 1, characterized in that two interference frequencies are affected exclusively by means of modulated injections of the fuel with different injection times and/or injection quantities.
5. The method as claimed in claim 4, characterized in that the modulated injections of the fuel are produced with at least one control valve (4), the production of modulated injections with different injection times and/or injection quantities being

carried out either via a common control valve or via at least two separate control valves (4, 4').

- 5 6. The method as claimed in claim 1, characterized in that one interference frequency is affected by means of acoustic excitation of the gas flow and another interference frequency is affected by means of modulated injection of the fuel.
- 10 7. A device for affecting thermoacoustic oscillations in a combustion system (5) comprising at least one burner (6) and one combustor (7), in which, in the region of the burner (6) there is arranged at least one acoustic source (3, 3') for producing
15 acoustic excitation of a gas flow forming in the region of the burner (6), and/or in which the burner (6) has at least one fuel supply device with at least one control valve (4, 4') for producing modulated injection of a fuel,
20 characterized in that a control system (2) is provided which drives the at least one acoustic source (3, 3') and/or the at least one control valve (4, 4') to affect at least two different interference frequencies of the thermoacoustic
25 oscillations.
8. The device as claimed in claim 7, characterized in that the control system (2) has a control path (8, 9) for each interference frequency to be affected, which,
30 on the input side, has a frequency band-pass filter (10, 10') tuned to the respective interference frequency and, on the output side, is connected to the respective acoustic source (3, 3') or to the respective control valve (4, 4'), each control path (8, 9)
35 containing a time delay element (11, 11').